

**Water Quality Standards Advisory Committee
Meeting Minutes
NH Department of Environmental Services
January 27, 2010**

Members Present:

Robert Ball	NH Association of Conservation Commissions
Dan Blais	NH Home Builders Association
Donna Hanscom	NH Water Pollution Control Association
Mark Hutchins	Normandeau Associates
Tracy LaChance	NHBIA
Larry Morse	NHANRS
Peter Rice	NH Municipal Association
William Schroeder	NH Lakes Association
Ellen Weitzler	USEPA

Others Present:

Ralph Abele	USEPA
Chris Albert	NHANRS
Dave Cedarholm	Town of Durham
Michelle Daley	UNH NHWRRRC
Mike Metcalf	Underwood Engineers
Keith Robinson	USGS

DES Staff Present:

Jeff Andrews	NHDES Wastewater Engineering Bureau
Shane Csiki	NHDES Geological Survey
Gregg Comstock	NHDES Watershed Management Bureau
Paul Currier	NHDES Watershed Management Bureau, Administrator
Ken Edwardson	NHDES Watershed Management Bureau
Bob Estabrook	NHDES Watershed Management Bureau
Lisa Fortier	NHDES Watershed Management Bureau
Jim Gallagher	NHDES Dam Bureau
Wayne Ives	NHDES Watershed Management Bureau
Brandon Kernen	NHDES Drinking Water and Groundwater Bureau
Dan Mattaini	NHDES Dam Bureau
Sara Pillsbury	NHDES Drinking Water and Groundwater Bureau
Phil Trowbridge	NHDES Watershed Management Bureau

1:30 – 1:40 Introductions

William Schroeder

Introductions were made around the room.

1: 40 – 1:45 Approval of 11/23/2009 Meeting Minutes

William Schroeder

Extra copies of the current meeting agenda and meeting handouts and 11/23/2009 meeting minutes were provided to anyone who needed them. Bill Schroeder complimented Lisa Fortier on the lengthy but accurate meeting minutes.

Corrections to 11/23/2009 minutes

Bill Schroeder – I believe that Jeff Deacon made the comment on page 16 about NEIWPCC. John Magee is claimed to be the person who made a bunch of comments on page 11.

Lisa Fortier – He said it wasn't him so I am not sure who made the comments. Unfortunately I marked them in blue but they didn't print out in color. On page 11, at the bottom, they ask if they would incorporate the

metrics into a habitat score metric within the metric. Does anyone know who mentioned that? They also mentioned sensitive taxa.

Bill Schroeder – It is probably ok to leave that with a question mark because it doesn't look like we can help. The words sound familiar.

Lisa Fortier – I will just mark it as unknown.

- **Bob Ball** made a motion to approve minutes and **Dan Blais** seconded. A vote was taken and all voted in favor.

1:45 – 2:15 Proposed Legislation Related to Enforcement (HB 1348) and Designated Uses (HB 1305) Paul Currier

The bill language can be downloaded from the web links on the agenda. **HB 1305** proposed to do three things: identify NH's designated uses and give them a definition, clarify the definition of surface waters and clarify that jurisdictional wetlands are included in the definition of surface waters for the purposes of the WQ Standards, and incorporation of the federal antidegradation language that the states are required to incorporate into their WQ Standards. HB 1305 was heard by the House Resources, Recreation & Development Committee last week. There were lots of folks in the RR&D Committee, the wetlands and construction community that were unaware that these provisions already existed in rule and were uncertain that DES had the authority to make those rules in the first place. There is room for confusion in the language in what identifies what is a wetland and what is a surface water in the wetlands statute RSA 482-A and RSA 485-A, the statute that houses the water quality standards. As a result of that Larry Morse and Chris Albert are here today. After the hearing a RR&D subcommittee was formed and they met this morning. There were many conversations between us and the resource scientists in the interim. A suggestion was made that if the WQSAC were willing to take on a discussion of those issues, work over the proposed legislation and make a recommendation to the RR&D Committee, then the bill could be sent to interim study. The WQSAC would have time to work on it between sessions in June and October. The bill could be improved and modified and come back with full knowledge and support of all the constituencies. I expect the same thing will happen to HB1348, which hasn't been heard yet, which changes RSA 485-A:12, which is the statutory language that gives the Department the ability to enforce surface WQ Standards and makes it unlawful for a person to cause a violation of the WQ Standards. The language now restricts the unlawfulness to persons who cause discharges. As the WQ Standards evolved there are now a number of activities that could result in a violation of the WQ Standard that don't cause discharges. I think that one of those is water withdrawals. For a while, our standards have provided that instream flow has to be sufficient to support the designated uses and we have been refining what that means in a quantitative way for some time but RSA 485-A:12 doesn't cover that. The intent was to make sure that DES had the authority for the broad range of activities that might result in a violation of surface water quality standards. That bill hasn't been heard but it is reasonable and I think DES would recommend that the discussions be wrapped into the discussions in this Committee as well. I would be glad to answer any questions about the language of the bill or sequence of events that has led to that recommendation. We are asking for a vote of the Committee on accepting that responsibility and a vote on adding a member from the NH Association of Resource Scientists.

Bill Schroeder – Can we have some questions or discussion on that idea before we take a vote? This has all been within the last week?

Paul Currier – It was this morning.

Peter Rice – What enabling legislation do we have in terms of adding organizations and interested parties? Is there a cap in the number of people we have?

Paul Currier – No, the Committee operates under the Terms of Reference that were last revised in January 2009. There is no enabling legislation. It is an ad hoc advisory committee and members serve at the invitation of DES and the Terms of Reference were suggested by DES and adopted by consensus. Membership is flexible at the discretion of the Committee.

Bill Schroeder – The Terms of Reference were part of the meeting agenda two meetings ago and they were discussed. Anyone who doesn't remember can read them and the minutes.

Paul Currier – I think they are on the DES website.

Peter Rice – What do we have now for membership in terms of total membership?

Paul Currier – I will look at the list.

Ellen Weitzler – I think there are nineteen organizations so far and I don't know if each of those has a member.

Paul Currier – We added the Home Builders Association.

Ellen Weitzler – We added the Water Council in January 2008.

Bill Schroeder – There are at least one organization and perhaps several that don't currently have a person but they have a position on the Committee. I am thinking of the NH Rivers Council. There may be others.

Paul Currier – I think that the US Fish and Wildlife Service is another.

Bob Ball – What is the timeframe that they expect us to work on this issue and what would be the end result? What other items would that displace from our agenda?

Paul Currier – The timeframe would be the end of the session, which is around June, when legislators start having time to work on things again, to about October or early November, which is the deadline for filling bills. I am little unclear in the interim study process but I believe that the interim study bills have language available and be processed before new bills the next session. October would be the timeframe and the product that would come from the Committee would be recommendations for draft language. Both of those bills were requested by the Department. The idea is that the Advisory Committee would make recommendations to the Department, which would then make the request to RR&D. I think that RR&D will appoint a subcommittee and that subcommittee will attend meetings and the subcommittee will take the recommendation of the WQSAC back to the RR&D Committee for their action when the session begins.

Tracy LaChance – I think our agenda goes until May and we do not meet in the summer. I wonder if there would be enough people around in the summer that could do it, whether it is a full committee or subcommittee that could work on it over the summer and report back in September.

Paul Currier – We were thinking an August or September meeting might be sufficient to do it, recognizing that summer is not a good time to get a lot done.

Phil Trowbridge - In terms of what we would not be doing on our list is the temperature criteria. It was scheduled for our June meeting and it is a lengthy process and we would have to do a lot of new analysis for that. If we were to take on this task we wouldn't be able to do this as well so we would be pushing that to next year.

Paul Currier – There is no down side to doing that. There is plenty of work going on in the numbers arena regarding temperature standards. If it is postponed we will have more work to present to the Committee when it resumes meeting. Specifically, Jennifer Jacobs from UNH is working on an EPA grant is pulling together regional numbers relative to temperature criteria, mostly for small stream, for aquatic life for fish habitat. That is a new project and it will be an advantage if we delay a bit.

Peter Rice – Is the interest of the organization focused on this one topic or is it something that you are envisioning the continual participation of this committee? If there are nineteen other groups and each one has the opportunity to have input, is it critical that you are at the table?

Larry Morse – The association membership is wetlands soil scientists and wildlife habitat specialists and our organization has been very active in DES sister programs as far as the wetlands regulatory aspect under 482-A. The legislative process that is going on currently, the assessment and monitoring of wetland function and values, will be the responsibility of a certified wetlands scientist. As standards, interpretations and assessments go forward with respect to assessing the wetland component of the surface waters the services of wetlands scientists will be critical in bringing that information forward in the decision-making process within DES, and stream crossing assessments as well. Many of our associated members are involved in doing those assessments so I envision that we are not here for just that issue but because we have areas of expertise and routine regulatory interface with the Department as it implements WQ Standards as they relate to wetlands. It makes sense that this would be a more permanent position and would be liable to the Committee. Our standpoint and viewpoint of the processes involved and the science associated with wetlands assessment would be a value to the Committee and a value to the rest of the Association to be up to speed on what the

Committee is doing as well as how surface water quality is interfaced into the other regulatory aspects as we go forward.

Bill Schroeder – The thing that I am concerned about is the June to October timeframe. As you pointed out, we don't normally meet in the summer and we meet every two months otherwise. If the issues are complex we have sometimes formed a task group as a subsidiary of this group, where those who are interested can participate. They can set their own schedule, meet more frequently and bring recommendations to the larger group. Would that be a more viable way of doing this?

Paul Currier – I was surprised by the testimony. There were good questions from the RR&D Committee but it was apparent that there was a general lack of knowledge about how the water quality standards process works and the three things that are in that bill are central to the water quality process. It might be more productive to deal with them as a Committee as a whole. I am not proposing meetings over the summer but I am planning on working as intensely as we need to in the fall to work on the issues.

Larry Morse – I agree with both of you because I think there is value for the concerned parties to meet with Paul, either as a subcommittee or outside of this, because I think there needs to be understanding of regulatory frame and structure and how it is implemented through law and rule and how it is intended to be implemented in the regulatory standpoint once the framework and structure is understood by all parties. It will be easier to bring the issues forward that need to be focused on.

Paul Currier – I had a post-subcommittee conversation with Representative Jim McClammer, who is a wetlands scientist and is on RR&D Committee. It appears that we had parallel communities of practice under RSA 482-A, the Wetlands Statute and RSA 485-A, the Water Quality Standards Statute, for some time now and all of a sudden we are realizing that we need to talk to each other.

Peter Rice – I would like to support Paul's position on this and I think that it is important that the Committee as a whole participates in this. At times, the subcommittees do their thing and come back to us and it comes as a surprise to us and requires a lot of assimilation in a short time and we are given a question to answer that day and I would like to have our input as a whole. I concur with Paul on this rare occasion.

Bill Schroeder – I think this Committee is an ad hoc advisory committee to help DES flesh out ideas, get different reactions to different DES proposals and act as a sounding board. I think that DES will probably need to do some work to explain the issues and give us a flow chart or diagram of the issues and we can engage with it and see how much additional study needs to be done outside of our regular meetings. Do you think it would be possible to have an outline view of the issues and questions that we need to be thinking about for the June meeting?

Paul Currier – Yes, we will provide read-ahead materials, which are in development as a result of conversations so far. We will get everyone up to speed on what the issues are at the June meeting and the Committee can fill in the details on the strategy.

Bill Schroeder – What kind of wording would you suggest for a motion for the WQSAC to accept responsibility?

Paul Currier – They would agree to advise DES and the legislature on HB 1305 and HB 1348.

Ellen Weitzler – Do we need a motion to add another organization to the membership?

Paul Currier – Yes.

Bill Schroeder – The first one is to advise DES and the legislature on HB 1305 and 1348. Is there any more discussion on that?

Phil Trowbridge – This would be for the June meeting?

Bill Schroeder – Yes, but I don't think that this needs to be in the motion but that is my hope because with the timeframe that we talked about it would be good to get going as soon as possible. Are there any questions or discussions?

- A motion for the Committee to advise DES was brought forward by **Peter Rice, Tracy LaChance** seconded. A vote taken and was approved unanimously.
- A motion to accept **NHANRS** into WQSAC was brought forward to **Ellen Weitzler** and was seconded by **Dan Blais**. A vote was taken and was approved unanimously.

I am Shane Csiki and I am with the NH Geological Survey at DES. I recently completed my PhD work at the University of Illinois at Urbana-Champaign in Fluvial Geomorphology. I work here during the day and at night I write my dissertation. I hope to finish by the end of 2010. I was hired to engage and lead the state's initiative for the state's Fluvial Erosion Hazard Program, which is basically mapping areas adjacent to rivers that are prone to erosion damage. One of the components of that is collecting river geomorphic assessments. Fluvial geomorphology is inherent in the type of river condition assessments that we are talking about. Ultimately, if HB 1305 and 1348 pass, there will be a geomorphic integrity definition added to the state's legislative use definitions. If that is the case, the State of NH has to devise a methodology to go out and assess river segments to see if they are impaired and if they fit that definition of geomorphic integrity, for listing purposes for the 303(d) and Clean Water Act. We are the first state to propose this. I was asked to come and talk to you about the different methods to crack this problem. We are already engaged in some geomorphic assessments now in the state as part of the Fluvial Erosion Hazard Program. I will talk to you about what we are doing currently as well as where we should probably be thinking about going in the future if we are thinking about river conditions assessments to determine if they fulfill physical or geomorphic integrity. Fluvial Geomorphology is the study of the river forming process. Fluvial is the action of running water and geomorphology is broken into three components. "Geo" means earth, "morph" is form and "ology" means the study of. We are studying how running water shapes the land forms on the earth surface. Rivers are beautiful systems. The best way to think of a river is that it is a conduit of flow and sediment transport on the earth surface. Rivers are nature's drainage systems. They are draining flow through natural erosive processes, sediment, putting them through these conduits on the landscape that flow downstream and ultimately end up in our oceans. Rivers maintain a fine balance between flow and sediment. Rivers are constantly trying to maintain a balance so that the amount of sediment that is transported in a river is balanced with the normal flows through that system. Lane's balance is a good tool to illustrate the delicate balance rivers try to maintain. Lane was a researcher in the fifties who devised this. Rivers have a carrying capacity and for a given flow they have a certain amount of sediment that they can carry, both transported along the bed and in that flow. If you increase the amount of water in the river but don't increase the sediment discharge, as can happen in a major flood event, you will tip the balance up and have more water than sediment and you will have degradation, or removal of bank and bed material as the river tries to achieve that carrying capacity to the amount of sediment that would be carried by that flow. Conversely, if you have a bank failure that puts a hillside in the river but the flow doesn't change and hasn't gone up so you don't have the competency to increase the transport of that material and you have deposition in the channel. This is an important concept for aquatic habitat because aquatic habitat thrives in conditions where you have flow and sediment transport in balance. They thrive in conditions where you have pool/riffle structures in your beds of your streams. If you have erosion from a major flood and you put sediment in the river channel and you embed your riffle structures you are increasing your ability for habitat to thrive in a river channel. In the United States, up until this point, the geomorphology, or condition of the river or bank stability, has not been factored into river water quality programs. The geomorphology, or the conditions of the banks or the bed, is just as important for physical habitat as having clean water, or water that is flowing at a rate that aquatics have a good amount of oxygen, for example. In water quality programs, habitat quality, biotic integrity and water chemistry have been the primary target of water quality programs up until this point in the United States. States have not really looked at channel stability even though the stability of a river channel directly impacts your water chemistry and the integrity of a river to maintain aquatic life in your habitat. This definition will give us another tool to maximize water quality for not only human use but habitat quality, biotic integrity and maximization of good water chemistry. A geomorphic assessment is where you go out and you establish and evaluate the present condition or stability of a river channel. Are the banks stable? Is the bed free of a lot of fine sediment that could impact aquatic habitat? Are flow and sediment transport in balance? If we have excessive sedimentation or bank erosion, or a lot of fines that are embedding your riffles, that suggests instability in the system and somewhere upstream there is an increase in your sediment source to the river channel that could indicate instability. It also suggests that if you have an area of bank erosion it means that

more of the bank will fall in the river in a high flow event. There is also a public safety component if there are houses or infrastructure that could fall into the river. If a river has geomorphic integrity it increases the chances of good habitat for aquatic life. The state of NH, as a result of the devastating flood events that we had 2005-2007, asked if we could assess the conditions and stability of a channel of a river. Can we make predictions about whether a particular section of a river poses a public safety issue? We could have an unstable area with bank erosion and houses falling in. Our neighbor to the west, Vermont, has a well developed rivers program that has a whole suite of protocols that allow them to go out and assess river conditions. There are three phases and I will be talking about Phase III at the end of my talk. I want to talk about what we are doing in NH that focuses on the first two phases. The first phase is GIS analysis of a river. It is a pre-analysis to evaluate a rivers condition and prepare to go out and collect data in the field so we have some quantitative and qualitative information about what a rivers condition is along different reaches of a particular river so we can ask if it is in balance and if flow and sediment transport processes are in balance and the banks stable. A lot of this was the result of Steve Couture's initiative and forward thinking. In 2008, the first of these assessments was undertaken in the upper and lower Exeter River Watersheds. One of the outputs of the geomorphic assessments is that you can use the information to create fluvial erosion hazard zones. We undertook three this year: the Ammonoosuc, middle Exeter Watershed and the Isinglass Watershed, paid for by EPA, in the case of the Ammonoosuc and FEMA funds for the Exeter and Isinglass Rivers. There was FEMA funding from the Department of Safety, who obviously were interested for hazard mitigation purposes. We will do the Cochecho and Lamprey Rivers next year, which is about 120 river miles. In 2011 and beyond we will be focusing on the Piscataquog and Souhegan Rivers because they have erosion issues. We will be expanding it from there. Doing a geomorphic assessment under this protocol is a two-step process. Phase I is a GIS analysis. We look at the rivers in terms of its form and break it up into different reaches. When we looked at the Isinglass River, which is seventeen miles long, we had to look at a number of parameters to determine where we were going to set our reach breaks. A river reach is a segment of river that has enough significant natural characteristics that each point within the reach can be grouped together with all the other points to make a set reach of river. When we determine where to put our reach breaks we look at a number of factors that could potentially change river processes at a particular location or within a few inches of reach width, for example, grade control. If you have a bedrock waterfall you have the potential for deposition of sediment upstream of it and scour downstream of it. That means you don't have bedrock on bedrock walls. A dam will function in the same way and you will have a reach break there. Surface geology, natural surface materials, glacial outwash, glacial till deposits and the underlying bedrock geology, if it is available, is the number one factor that will influence the natural path of a river. For determining reach breaks we look at the soils, land cover, land use, encroached areas, areas that were straightened for logging, major tributary inputs, changes in bed material determined by aerial photography, and sinuosity. We do a windshield survey to determine that the reach breaks are in the correct places. In the Phase II assessment we walk every part of the reach. We walked all 17 miles of the Isinglass Rivers this summer and did a complete assessment on every single reach. We collect information on the various components and two are critical to determining sensitivity. We collect cross channel transects by taking a tape across a channel and measure our bank full width, the depth of the channel to bank full and our floodplain width. That information is critical for using the Rosgen Stream Classification System to determine a stream type for a particular reach. The Rosgen Stream Classification and a rapid geomorphic assessment are the two components of the degree of encroachment that is on a river channel. What is the condition of the banks and floodplains? Do we have significant erosion? What are our wetlands and debris jams? Is there a lot of bed sediment storage? Phase II is a rapid geomorphic assessment and although we may measure the length of erosion we don't get into measuring heights and bank angles at this stage and we are primarily doing a count of various issues within a particular reach and the primary quantitative data comes from the cross-sections. Using the data from the cross-sections, we calculated our various ratios and we assign a stream type. The Rosgen Stream Classification System is language we can use to communicate different river processes to other people that are working with rivers. It takes major river processes, such as access to floodplain, its degree of incision and groups those together to give rivers a stream classification and an idea of how stable that river is likely to be, based on where it was typed. A rapid geomorphic assessment incorporates the quantitative data that we get from the cross-sections and some of the qualitative data. If a river channel has been straightened over time

that means there is the potential that river has down cut and there is probably erosion downstream because you have increased your energy so you have increased the energy downstream eroding the banks. If that were the case, you would check poor. You would do this for degradation. Basically, you are assessing your degree of incision in the channel. You are assessing if there been a lot of sediment accumulation, if the channel has widened and does the channel appear to have migrated over time. Each one of these four adjustment processes a score based on where your checks lie. It is somewhat of a qualitative process but you try to make it as quantitative and rigid as possible. Each one is given a number and a stream condition based on that and if you know your stream type you can give it a stream sensitivity that would range from very low, meaning confined to bedrock and not likely to go anywhere in a human lifetime, to extreme, which means that the next flood could cut through the bank and cut across a floodplain. We use this information to do fluvial erosion hazard zones. If we have a river reach, based on an assessment, that rates high or extreme high on stream sensitivity, does that mean that mean that the river reach fills geomorphic integrity or a condition of stability? It provides a summary of a river reach with extreme sensitivity that might have severe instability. We have cross-section data and allowed the other information we collected to carve this rapid geomorphic assessment. Is it really unstable and does it really fulfill geomorphic integrity? I did some research to see what other states were doing to address this problem. Not many states have really gotten into this but there are two states. One state is Arizona, which has been engaging in a river geomorphic research to address the question of physical river integrity. They use something called the Relative Bed stability index. It was developed by Phil Kaufman at EPA Region 10 in the Southwest. The basic premise is that for a reach of stream are there more fine materials on the bed than one would expect. If you have a lot of fine material on the bed it means that somewhere upstream you probably have bank erosion, more than likely, or construction is depositing material that is washing downstream. That suggests potential instability upstream and it also indicates potential impacts for aquatic organisms. Obviously, it is recognized that excess sediment has been the leading cause of water quality impairment for many years. I won't get into the minutia of the bed stability index because it gets into a lot of equations and we are not going to get into that. The key point is that you have a score and the higher the score, the more stable your bed and more increased your physical integrity and aquatic habitat are and the lower your score, the more decreased the physical integrity. This is talking about bed stability only. It is not talking about if the bed has a lot of aggregate sediment in it. It does not talk about channel down-cutting or widening. The Arizona Department of Environmental Quality recently engaged in this but they don't have a geomorphic physical habitat integrity definition in their rules. They only talk about bottom sediments. There are a lot of bottom sediments, obviously aquatic habitat, and that is why we chose the Relative Bed stability index. Another factor is that it was developed in the Western United States. They did show very promising results. For example, the lower score did coordinate quite nicely with removal of habitat and vegetation on the floodplain, which would increase sediment input to river channels. Their Fluvial Geomorphology Program is on ice because their Fluvial Geomorphologist is about to retire. I told my counterpart in Arizona about the NH Rivers Program and our relationship with Vermont and he had nothing but complements about how far we have gone and wished us the best of luck as we progressed. I contacted Mike Klein of Vermont because he wrote the protocols. We have a good relationship with him because we adopted the protocols for our Fluvial Erosion Hazard Program. I asked him how we could use these protocols in addressing geomorphic instability and integrity and he replied that he has been thinking about it since the day he wrote the protocols. In Vermont they are looking at antidegradation and information about the current stability of a bed so as not to incur instability in the future. We are trying to go in the same direction that Vermont is going but we are trying to do it differently. The concern is that by simply saying that a river has extreme sensitivity and is impaired it may be going one step too far and we have to be careful not to misapply the protocols. The other consideration is that they have a Phase III protocol that builds upon the Phase II protocol. What Mike has in mind is going out and using this protocol to hone further whether the reach is truly impaired. If we do a Phase II assessment for a reach on the Isinglass and determine that we have extreme sensitivity, first, we will have to take the Phase II data, collected across the state, and determine cut-offs based on the statistical analysis. If a river is in extreme high sensitivity, we are in impairment purgatory and we have to do more work. You have to go out and do a Phase III. In Phase II you noted things like length of erosions and took measurements and cross sections with a rod level and it is not just a reference to bank full. You go out with a level and if you have bank erosion, and unless you have a bank slump that has

fallen into the river, you measure the height and bank angle. Basically, it is along the lines of a bank erosion hazard and stability index, which I know EPA uses. It was developed by Dave Ross. You try to use all that information to get at if a particular river is impaired. The problem is that we are not there yet. The next step in trying to assess river instability is going to need collaborative work between us and others. We will need to collaborate with the state of Vermont, for example. Mike Klein came up with a well developed program there and we need to try to correlate some results we get with Phase III with the Phase II and ask where they jive and where are the cut-offs? How do we actually say that a particular reach is unstable because we don't want to misrepresent the output of Phase II because we do collect some quantitative data but it is not as detailed as a Phase III? It can give us an idea if it is actually unstable. Mike is interested in, and I am interested in collaborating with him on, is trying to combine the results with the EPA bed stability index. He has made the offer that we could work with him and Phil Kaufman from EPA to try to take a look at this in the near future as well as look how to incorporate this with the bed stability index to maximize the amount of information we are collecting in order to make a determination of impairment. You don't want to misrepresent your Phase II output but you also make sure that you are impairing what you really need to be calling impaired. Ultimately, it is the Watershed Management Bureau's Water Quality section's area. I am telling you as a geomorphologist what I have learned and some suggested routes we need to take if we want to do it correctly. Vermont presently wants to propose legislation and we are a little ahead of Vermont. I would highly recommend we do this right and that would entail the collaboration of other states, Vermont specifically because Arizona has fallen off of the radar, and Phil Kaufman from EPA. Some of you may have heard of the EPA's Watershed Assessment River Stability and Sediment Supply. I have put it in here in case you have heard of it. The Vermont Phase I, II and III protocols have some similarities to this procedure. This procedure incorporates a Phase I reconnaissance level assessment, which is akin to a Vermont Phase I. You go out and use GIS analysis to determine potential reaches that have a major problem. You could use the Phase I output to do that. The Vermont Phase II is reminiscent of the Rapid Resource Inventory, or RISSC, or the Vermont Phase II is more fuel based. The prediction level assessment is what Vermont Phase III wants to get at. With all this data we collect we want to be able to predict if a river has the potential to incise or widen in the future. Another option available, since we are collecting cross-section data for the Phase II assessments and we are collecting GPS locations for those cross sections, would be to use the data to establish a baseline and you could go out every few years and measure to see if the river has widened or deepened. If you establish a ten or fifteen year record you could determine if a river has widened, deepened, narrowed, and down-cut, had an increase in sediment, has instability and could have a potential impairment. Ultimately, if you want to do that right, that is how you would do it but the main problem is resource considerations and for that reason it isn't likely to happen. Long-term monitoring is an option but realistically it isn't the best option. In summary, we have a Phase II protocol presently in use that gives us some idea of a rivers potential sensitivity to future change but is it unstable or lacking integrity? That is where we have to do some actual research to make a determination. A Phase II can tell is if a reach has potential instability. One of the reasons that I decided not to pursue academia with a PhD and come to work for the state government is that I wanted to use my knowledge to assist the applied realm and solving river problems. I have some familiarity with various state governments and where they are with the different rivers management programs. The NH Rivers Management Program, combined with the Vermont program, thanks to Steve Couture, is far ahead of many other states at this point. I think we are on a good road and I would recommend we stay on that good road and take our time to do it right to ensure that other states look to us as a future model. This legislation is a way to do that. I think that it will be ok if all the Phase III data isn't done by the time the legislation is passed because it is still a step in the right direction.

Bob Ball – I am little confused about the relationship with this new protocol and the turbidity standard that we have. It seems little unstable rivers are behind turbidity and the state already has a standard for turbidity in terms of how many NTUs make a river impaired. Why would you want to do something in addition to that rather than putting fancy monitoring equipment in the stream and measuring turbidity?

Shane Csiki – Looking at turbidity is one way to try and diagnose a problem but it doesn't tell you where the problem is because turbidity measurements will tell you if you have a lot of sediment in your river but it doesn't tell you the amount of material you have on the bed. The amount of material on a river bed is more

an indication of how severe the problem is upstream that is contributing to that sediment load than the actual turbidity of the suspended sediment in the river itself. That is one way of assessing bed stability by using geomorphic analysis. A strict turbidity measurement doesn't enable us to measure erosion on this particular bank. If you could measure the erosion of the bank from the data you could also calculate potential additional contribution of that material to the river. With some data analysis you can calculate how much of that material might fall into the river in the future. There is also a public safety component. This isn't strictly about fish but also maintaining the geomorphic integrity of the river for public safety so that stream banks aren't continually eroding and causing houses on the banks to fall in. The only way to get at that is to go out and look at where the river is eroding so that you can target resources and remedy and fix those problems in the future.

Bob Ball – I went to a couple of presentations on the Ammonoosuc and I see there is a huge historic component to this. When predicting whether a stream is unstable, the historical value of it was a big part of it. If a stream has wandered continuously since 1918 it will continue to do that. I didn't see a historical component in this presentation.

Shane Csiki – That was a deliberate omission on my part because I only had so much room on the slide to put the main point. That is one component in the Phase I analysis. We do go in and look at old topographic maps and old aerial photography to see where the river has been over time and where it has migrated over time.

Bob Ball – It is possible that it could be on impaired list when it has naturally been moving?

Shane Csiki – That would depend on what the condition is presently. Rivers naturally migrate across their floodplain. Some rivers, if they have stable banks, will do it very slowly over centuries and some rivers, if they have a lot of unconsolidated material, can move overnight. What we are looking for in a geomorphic assessment is severe erosion now. If you have a banks that are very stable and a river that is migrating slowly, will likely have enough time for the banks to become stabilized with trees and vegetation. We are primarily looking at areas that have severe erosion.

Mark Hutchins – Related to natural versus unnatural in rivers, the concern I would have declaring, from a water quality perspective, a river as being impaired and having regulatory implications because of that classification, when in fact it may be entirely unrelated to man's activities and is likely to continue on into the foreseeable future. It is one thing to identify rivers that are sensitive to change but it is another label them as impaired or potentially impaired when in fact, an actual rainstorm might trigger a severe erosion event which might be totally unrelated to us.

Shane Csiki – That is the reason why I recommend that Phase II is one way to sift those rivers that may potentially have a problem but you have to go out and take measurements to make a determination. In Phase III, not only are you measuring your parameters in that river segment, you also have to compare it to a reference reach in another watershed of similar size and similar geology. You have to compare it to something that is representatively stable. Phase II gets us halfway there but it doesn't get us totally there.

Jeff Andrews – Can you use changes satellite imagery once you are in impairment purgatory to see if things are changing to the point of impairment?

Shane Csiki – In terms of measuring lateral migration rates, the satellite technology is improving to the point where you have a high enough resolution and in the future that is one tool that could be available to us. I would not recommend using old aerial photography because if you go far up enough in the watershed to the headwater streams you can't determine where the river is because of the poor resolution but it is one tool that will be available to us as we move forward.

Keith Robinson – Would it be beneficial to relay your measures of stream stability and erosion to other classic methods of designated use attainment like current for certain fish species or water quality so you establish a relationship between measures of instability and the presence of certain fish species so that you can predict what fish may be found in certain eco-regions so you are building your measure of impairment not just on stability but on these other measures?

Shane Csiki – Vermont is taking a crack at that. They have hired a statistician from UVM. They gave them all of their rapid geomorphic assessment. Another component of Phase II is a rapid habitat assessment, which I did not focus on, which focuses on the degree of embedment of your riffle, epifaunal surfaces available and that sort of thing and tries to do a statistical analysis to see how well they correlate.

Ralph Abele – What NH has done on the protected instream flow studies on the Souhegan and the Lamprey was to do this Meso habitat classification (MesoHABSIM). In my experience, I think that there are scale issues between the geomorphic assessments and some of the Meso habitat stuff that you need if you are trying to predict habitat changes. In this state you have the only long stretches of river, whether you like the classification or not, that have been classified. It seems to me that you would have an interesting comparison. Run through Phase II; take a look at these two rivers that have already been broken out into different Meso classes. It is more of a bottom classification. They look at the sides a little bit. We are in a unique position in that no other state has done an instream flow approach. Most of them are cross-sectional studies or used something else. You had the Souhegan on your list of ones to do. There might links that may not be apparent at first, unless you look.

Shane Csiki – That is definitely something we can look at.

Bill Schroeder – What would the proposed legislation seek to do?

Paul Currier – I didn't mention that when I talked about legislation. In HB 1305, which lists the designated uses, there is one new one which is geomorphic integrity. In the past we have assessed and made impairment determinations under aquatic life. We always said that we were trying to put a square peg in a round hole but there were situations that we felt were impaired. One of those was Nash Stream. It is state forest land and the channel was bulldozed straight. There was a dam breach and some 1950's vintage restoration that put berms on the side and bulldozed the channel. All the channel forming processes were completely trashed. The fishery, although a fairly decent fishery, could be a whole lot better. We declared it impaired and worked with Trout Unlimited to use 319 Grant Funds to repair some of the damage so the stream functions as it is supposed to relative to geomorphology and fish. The Baker River wanders through sand and gravel deposits for a ways. The bank moves around and at certain high flows there has been cemetery encroachment. Every time another casket falls in the river we get a call from Executive Councilor Burton that someone should do something now. It would be nice to get this method fleshed out so we can figure out whether the solution is to move the cemetery or fix the river. Close to the Swift River and Saco confluence, the Conway Scenic Railroad has a railroad bridge there and the engineers back then didn't understand fluvial processes so they have messed up the natural geomorphology of the Swift River and it has been trying to get the bridge out of there ever since. We declared it impaired and put 319 Grant Funds towards trying to fix it. The more appropriate way to think about it is how do we get the river to where it is geomorphically appropriate? The way to start is to get a designated use to use analytical processes, that have been well-developed by Vermont to make good decisions.

Phil Trowbridge – Why don't we skip the next agenda item in the interest of time and move on to water level fluctuations?

Peter Rice – What action are we thinking about? You were talking about 305(b) and 303(d) for this. Are you planning on putting together a CALM for this and presenting this to the group? I have some serious heartburn over this. I understand it is very important but I agree with Mark in terms of the unintended consequences of looking at a symptom instead of the cause. You may have active river banks that, for water quality designated uses, still exist. River banks move over time and my concern is that if you place a reach on a 303(d) list you are going to have to do a TMDL and it becomes a federal regulatory process. I would be hesitant to add one more thing to that category if there is an alternative way to capture the goal, which is to protect the waterbody and the function of the river. To do this I would highly encourage us to do it that way versus adding another thing into a potential list of impairments which needs to be remediation and communities and the state don't have the money for. We want to protect the water quality and the function of the river and if there is an alternative that will capture the same thing, without having to create a new process, I would highly encourage us to look at that.

Paul Currier – I am sure that will be the subject of discussion.

Phil Trowbridge – For what we are looking at for a timeframe, a 2010 305(b) list will not include this. We are looking at 2012, at the earliest. We have two years to come up with this and the point of today is to get people familiar with the ideas and concepts. What I was going to talk about a little bit more was the steps we are going to go through. Something that is more clear-cut than an eroding bank might be a perched culvert, which is impeding fish passage. That is not a natural process so you are affecting aquatic life designated use in that case. We are very sensitive to the idea of not wanting to impair the whole state of NH to this but we

are trying to identify the Alsteads and get them on the impaired list before we have blow-outs that kill people. We are looking for an indicator that isn't too sensitive but sensitive enough.

Peter Rice – Do you have to call it impaired? Can't you say it doesn't meet design standards or function? Is this the only regulatory mechanism? It seems that for a perched culvert there would be other ways of doing it other than calling it impaired.

Phil Trowbridge – What law are you violating if you have a perched culvert? The only way this affects a law is if it affects a designated use and that comes through the Clean Water Act Rules. It has to be declared impaired before it is a violation.

Peter Rice – What if that culvert has been there since before the Clean Water Act?

Paul Currier – We can discuss that at length. So far, in the examples, we used an impairment determination to gain federal funds for that particular issue. That is more likely the case than not. We deal with, all the time, with all the other WQ Standards, is it naturally occurring or not? Our standards are full language that says that this number is a violation unless naturally occurring. This number comes up with bacteria all the time. We have to look at that reach, the numbers and the watershed and ask if it is caused geese and beaver. If it is caused by geese and beaver than it is not impaired. We have to do the same thing with geomorphic integrity. You take all the information and ask if the river is doing what it would do if humans were not present and they have never been. If the answer is yes, then you don't declare it impaired.

Peter Rice – We will have an opportunity to discuss this later?

Paul Currier – Yes.

Tracy LaChance – Can you provide more information on the examples, like Nash Stream? If you didn't have this to use to designate it as impaired then what did you base it on? How would it be different if you had this?

Paul Currier – We based it on biological integrity and biological integrity means that a direct assessment of the biology. The narrative standard that we talked about the last time, the Jim Carr language, is an adaptive community of indigenous species. The advantage of having separate designated use for geomorphic integrity is that you can use the analytical procedures and apply them directly without having to go to another set of analytical procedures and say the biology is impaired.

Tracy LaChance – So you might be able to get to something before you got to the biological degradation? Does that make sense?

Paul Currier – Geomorphic integrity affects more than the biology. It also affects human activity in the floodplains. It is somewhat broader and gives us the ability to get at situations like that without having to stuff it into one of the existing uses for designated uses.

Bill Schroeder – If anyone has any further thoughts and questions can they be e-mailed to Phil Trowbridge and Shane Csiki?

Phil Trowbridge – Yes, the whole point of this is to get reactions and more reactions are better.

3:05 Discussion of Policy Options for Water Level Fluctuations

Phil Trowbridge

Phil Trowbridge – You all should have received a fairly complicated flow chart. This presentation is to help walk through the flowchart. At the last meeting we explained that DES needs to set some sort of policy as it relates to water level fluctuations in impoundments. It comes up whenever we have to write a 401 Water Quality Certificate or modify one. It also comes up with the Dam Bureau and other things. So far we have been using Site Specific analysis and it would be better if we had a guidance policy to carry us through. We put together a discussion paper for the last meeting and it had a lot of details about our idea to use the biological condition gradient as a way to integrate the effects of water level fluctuations on the biology of the impoundment. There were lots of comments and we had a good discussion at the meeting. Other people e-mailed me comments and I broke them down into four groups. There were a lot of questions about the applicability. Would this policy apply to all impoundments, large lakes, local mill ponds, 401 WQ Certifications and DES dams? It was clear to me that we would need a fairly simplified approach because we were going to have lots of routine permit request and inquiries. We couldn't possibly do a BCG type analysis on everything and would need a de minimis approach. The policy also needed to be underpinned to our WQ Standards. People brought up lots of good issues about the BCG approach and how we would actually assess

how the biology of the impoundment was affected. Would we look at seasonality? Would it be ok to drain the impoundment in the winter as long as you fill it up by April? What would be the target taxa and would be the reference condition to determine the impact? Fish & Game brought up the question of mercury releases due to cycling of the water. What about fish passage? Based on that input, I went back to the drawing board I thought that I should put together a flow chart to answer the first three questions regarding applicability, a simplified approach and the link to the WQ Standards. I wasn't able to deal with the complicating factors of the BCG approach but I think we can at least constrain them to a box on the flow chart. We decided to limit the applicability of the policy to new or revised 401 WQ certificates that would either increase the release or withdrawals from an impoundment that would require DES to issue a 401 WQ Certificate. We wanted to make sure this policy only went into effect when all the other WQ Standards were being met. Essentially, we are asking applicants to demonstrate that all other WQ Standards are being met before we deal with fluctuations. There are two pre-screening steps. We added a de minimis threshold. If the release or withdrawal resulted in a foot or less of water fluctuation then that would be acceptable. The reason that we came to a foot is that Maine has a rule related to water level fluctuations in impoundments. They allow one foot of fluctuation in the summer and two feet in the winter. We just selected the summer threshold. We were thinking that we would have some sort of de minimis threshold so for your average impoundment that is going to fluctuate a little bit we really don't need to go any further than that. The next level of the screening process follows what Maine has developed for their 401 WQ Certifications, which is to look at a percent of the littoral area that gets dewatered during a drawdown. Maine, as a rule-of-thumb tries not to dewater more than 25% of the littoral area for a drawdown.

Keith Robinson – Has Maine looked at this from a quantitative assessment where if you drew down more than one foot you have no or minimal impact on aquatic vegetation or was it more of an arbitrary level that they came up with?

Phil Trowbridge – I am not sure but when I spoke to our lakes people they said that there would be at least a foot of fluctuation, naturally, within a lake. That change is within the noise of what you would expect.

Tracy LaChance – Does that one foot of fluctuation depend on the size of the dam or impoundment?

Phil Trowbridge – We were just talking in rough numbers. We were just trying to come up with some kind of basic, de minimis threshold that would make it easy for applicants to have minimal impacts. This is all trying to fit within the Antidegradation Rules.

Ellen Weitzler – What about cumulative requests? Can you go down a foot one year and then a foot the next year?

Phil Trowbridge – You are looking at one foot per year and your new level doesn't become the drawdown level.

Ellen Weitzler – These are requests for temporary drawdowns?

Phil Trowbridge – When we get an application for a FERC license, where they want to store and drawdown four feet to generate power but they are going to refill because they need to store up and generate again, they can't keep drawing down forever.

Ellen Weitzler – Can they lower their threshold each year by asking for a foot or are you going to limit? In other words, if they have a range and the year after, can they ask for a bigger range and an even bigger range in the year after that?

Phil Trowbridge – Each request would be a change in the 401 WQ Certification. It is all relative to the base goal level and the original full line, normally to the top of the impoundment.

Paul Currier – Dams, by their nature, create artificial situations and one of the things we have to decide is baseline and that is pretty arbitrary. Somebody put the dam in for a purpose and decided that the water level, instead of being where it ought to be, is going to be at another level. What we decide where it ought to be is kind of an arbitrary decision and what we are talking about is a deviation from the where it ought to be condition.

Bob Ball – You are saying the rate of change is not going to have any affect on the WQ Standards? If I take it down a foot in an hour is it ok as opposed to a foot every six months?

Phil Trowbridge – We haven't done the ramping rates yet.

Paul Currier – We haven't talked about rate of change yet but it is an issue.

Bob Ball – It seems like it should be in here somewhere.

Phil Trowbridge – For now, let's just talk about the absolute change. Maine has used 25% of the littoral area as a threshold. I thought that might be a good thing to follow and also link that to our Antidegradation Rules. We might want to use 20% instead because that is what we use in the Antidegradation Rules as a threshold between an insignificant impact and a significant impact. What I am proposing is to use that 20%.

Peter Rice – Is that 20% beyond that one foot? If you drop it plus or minus one foot, so it is a 2' difference, and you drop it below the bottom of the 2' and that difference below what is your low point and what is actually done, is that lower area below that 20% that you are talking about or is it within that fluctuation?

Phil Trowbridge – It is all relative to the basic full line. Think of this as sequential tests. If you are going to drawdown less than a foot you don't need to go any further. If you are going to go down 2', or a foot and a half, then you are going to have to demonstrate that drawdown did not result in more than 25% of that littoral area being dewatered.

Peter Rice – Is it that additional half a foot or would it be a foot and a half?

Phil Trowbridge – It would be a foot and a half from the top of the impoundment. There are two ways of doing this. I am trying to add in different levels of complexity so that the applicants don't have to do any more than they have to. One way is to just look at the littoral zone as a 15' isobath. We took that from the Minnesota DNR definition of the littoral zone. You can get a bathymetric map of your impoundment and determine your area of your littoral zone by saying that it is 15' isobath to the 0' isobath. You can simulate what the water level would be at your drawdown depth and calculate the littoral area.

David Cedarholm – The definition of the littoral zone bothers me a bit with respect to a river where the littoral zone might be the top of bank whereas, like in the Lamprey River, the top of bank might be 3', 4', or 5' above the impoundment, such as Wiswall. You are already, in that point, say 25% below the limit in the littoral zone.

Phil Trowbridge – Are you talking about the riparian zone or the littoral zone? The littoral zone is the normal impoundment level down to the depth where you have rooted macrophytes. That is the definition of the littoral zone and it is not above the normal water level.

Paul Currier – I think the Lamprey River and the Wiswall Reservoir is all littoral zone.

Phil Trowbridge - We are making a mechanical process with 15' isobath using bathymetric curves. A more site specific study could also be done. If an applicant wanted to say that 15' wasn't the right depth for that impoundment, based on the information about rooted macrophytes, etc., they could use that. Also included in the site specific study box would be considerations of releases for PISFs in downstream reaches. There may be a case where, as a Department, we decide we need to release more than normally is allowed to maintain habitat downstream and then it would be allowed. An example of this is Webster Lake. This impoundment is drawn-down in the winter by the Dam Bureau. The surface area of the lake is 606 acres. If you were to drop a line at the 15' isobath your littoral zone would be 213 acres. 20% of that is 43 acres so that is what will be permitted to be dewatered and still be considered insignificant. If you take that value and apply it to the curve you could draw it down 3 1/2' and still be within the insignificant range. In fact, the draw-down depth for this impoundment is 2'. Northwood Lake is the same scenario but has deeper drawdown. In this case, we would predict that you could only draw it down by 2' but the actual draw-down depth is 6'. It is two extremes. It is not a statistical survey but I tried to pick two impoundments where we had bathymetric data and drawdowns in order to illustrate how this process works.

Bob Ball – Have you run numbers like this on Connecticut River, maybe Moore Dam?

Phil Trowbridge – I looked for Moore Dam but I didn't have the right bathymetry to do the Moore Dam.

Bob Ball – I just wondered if this would work with a huge waterbody.

Phil Trowbridge – If this group is ok with this process, then we can get into a more rigorous data gathering approach to see what those things look like.

Paul Currier – Their FERC license was just renewed and has another 40 some odd years to go so it won't come up for a while.

Ellen Weitzler – What process do you have right now to make these decisions? Do you have a regulatory process?

Phil Trowbridge – We do not have a regulatory process.

Ellen Weitzler – People just do whatever they want? Are you seeing problems?

Phil Trowbridge – It is really labor intensive and it is a lot of meetings and talking. It would help everyone to have some process to follow.

Paul Currier – A real case that we need to deal with is Wiswall Reservoir, where they have a 401 WQ Certificate which deals with a lot of drawdowns. We made a de minimis decision. The Durham water supply wants to increase their ability to draw-down and we need a decision mechanism. There is an active group in opposition to that so we will need a decision mechanism that will withstand an appeal. That is one of the motivations behind this.

Michelle Daley – Are there any situations where if you drew down a foot of water it would consume more than 20% of the littoral zone? Are you safe with the foot threshold to protect the 20%?

Phil Trowbridge – I don't have complete data for every impoundment. I can't say one way or the other. I have done this with eight impoundments and 2' was the minimum that was the problem.

Ralph Abele – I think that Maine tries to figure natural variation and then they apply the 1' to that.

Phil Trowbridge – Is that on top of the natural flow?

Ralph Abele – I don't know I am just speed reading the rules and they have a definition of natural variation of water level and when they talk about their allowable alterations it refers back to that definition. It would be worth checking. I remember one of the discussions I had was about the natural level of the impoundment. They spent some time looking at that. It might be different if you have a new proposal but I think a lot of the things that they were looking at were relic log driving impoundments where there have been big drawdowns and they are trying to rein that in a little bit. Some of their projects have a different scale issue, outside of Moore Reservoir.

Phil Trowbridge – I will double check that. One of the things that I wanted to do was bring this into WQ Standards so that we weren't making stuff up. We tried to pull it into our antidegradation provisions. This screening method is what we are using for determining insignificant and significant impact. For a case of an insignificant impact, which was something that through the different levels of screening we would not consider to be a violation of the standard related to wildlife, we would consider that to be acceptable under the assumption that no other WQ Standards were being violated and none of the other resource agencies objected. Some people raised questions about threatened and endangered species that lived within the 1' zone of the impoundment and Fish and Game might object to the drawdown. We might want to give them the opportunity to object and provide feedback there. That is why the wording is the way it is. However, if you get to the point where we determine if this is a significant change, we begin the antidegradation analysis. We still haven't resolved how to do the BCG analysis. We kept track of everyone's comments. We need to spend some time figuring out how we would do these assessments, suspend disbelief and pretend we can sort this out. If you had a case where you did your assessment using the BCG tiers and we determined that drawdown did not cause a violation of that standard, then we go to economic and social development justification, which is the other part of the Antidegradation Rules. A combination of the biological assessment with the economic and social justification would be provided to DES to make the determination if it was an acceptable tradeoff, following down the rule of either a DES denial or approval. In the other case where the BCG determined that there would be a violation of the WQ Standard under the proposed change, we couldn't approve that in the 401 WQ Certificate because it says that no WQ Standards will be violated so we would have to either revise the application or apply for a Use Attainability Analysis with EPA to waive or weaken that standard for that particular waterbody, which would feed over into DES approval. There are a couple of things to sort out and what we are looking for from you is some idea if you think this overall approach encompasses everything it should and would be useful if we can work out the details.

Peter Rice – In terms of the applicability of this, for new or modified WQ Certification caused by the activity of the withdrawal or discharge, is that any activity?

Paul Currier – That is new or modified discharge.

Peter Rice – If we were digging up a pipe next to the reservoir and it requires a Wetlands Permit, you would kick into the 401 WQ Certification and you would review our withdrawal or discharge activities at that facility?

Phil Trowbridge – You mean if you are digging up and you are not planning to raise or lower the impoundment?

Peter Rice – If you recall, the Bellamy has swings that are in the 10' range, if necessary, depending upon water use. It was constructed as a dam for a reservoir. The intent was fluctuation of the water level. It has lower suction intake structures. Is this for all activities that require a 401 WQ Certificate or anything that will cause a revisit of the operation of the facility as a result of that?

Paul Currier - Yes, it was the same thing with Durham when they got a 401 WQ Certification. The Wetlands Permit that triggered that wasn't even in the same watershed.

Peter Rice – Yes, but the big difference with that was that they agreed to fluctuation. Now you are revisiting it. We are not talking about giving up something. We are operating in a certain manner. Why should an activity that is totally unrelated to the operation of the facility trigger a review of the operation of the facility?

Paul Currier – That is the way the 401 Section of the Clean Water Act reads and it is now in the Statute. The Federal 401 License Permit can't be issued until the state certifies that the construction and operation of the activity, and activity is broadly defined, will not result in a violation of the WQ Standards. Distributing processed water to your surface area is not part of the activity. The activity ends at the treatment plant. Other than that, the activity is fairly broadly defined.

Peter Rice – That includes withdrawals?

Paul Currier – If you do something in the system that requires a Wetlands Permit that brings the activity into play as far as certification.

Larry Morse - Even if it is a maintenance activity?

Paul Currier – Only if it requires a federal licensing permit.

Larry Morse – What if it is a maintenance activity that falls under the General Permit criteria?

Paul Currier – General Permits get a WQ Certification for the General Permit so unless we identify a particular project as needing a modification to that General Permit in order to result in attainment of the Water Quality Standards, the project gets a pass.

Jim Gallagher – If we get an order from DES to repair a dam, does that trigger it?

Paul Currier – If it is done under the General Permit and it doesn't raise a flag as requiring special attention or conditions for operation or construction in order to apply WQ Standards. It already has a certification because we certified the General Permit.

Sara Pillsbury – Does the 1' and 2' criteria that Maine uses apply to all impoundment or certain types?

Phil Trowbridge – It doesn't apply to hydro conditions and that is where they apply the 25% of the littoral zone as their rule-of-thumb. It does apply to their other great ponds. I am not sure why they do it differently. We are choosing two pieces of what they do and combining it into a sequential screening.

Ralph Abele – It falls into the category of don't look at how sausage and laws are made. It is not all science that went into it. Part of it was the concept that things were already regulated, like hydropower, and they didn't need to come in and get a separate permit. That is why the hydropower is excluded.

Mark Hutchins – It is an extraordinary complex and slippery slope, the whole fluctuating water level issue. I have been involved with it for years, primarily with hydropower re-licensing. There is such a diversity of what was natural in our lakes. All of our recreational lakes are dammed now and one could argue that in itself is unnatural, and you should allow fluctuations, which we have eliminated with dams, by and large. With respect to BMP Policy, I am not sure what the status of it is now. I know that Flagstaff Lake staff recommended that the WQ Certification was challenged and the Board overturned it because their WQ Standards didn't support the 20% drawdown conceptually. Where that is now, I don't know but as far as I know the Flagstaff licensing is still in court. It is very complex.

Paul Currier – There is the issue of impoundments. Somebody built the dam. The idea of simulating a natural condition is out the window and no longer applies. The dam is built and the conditions for aquatic life or other uses, for that matter, are not natural. We have to figure out what WQ Standards to apply to the things that humans have built to impound water.

Mark Hutchins – Maybe the answer is to start back at the WQ Standards and recognize that impoundments are different. In Maine the WQ Standards didn't recognize the difference between a natural lake, an impoundment or a lake that was developed for hydropower or storage. Flagstaff is just storage intended to support down-river interests. It was intended to fluctuate and that is its whole purpose. Technically it violates WQ Standards. How do you continue that use?

Paul Currier – That is one of the things that were brought to the Committee a while ago but we haven't done anything with it. In our Water Body Catalog we recognize two kinds of impoundments as separate water body types that can have separate WQ Standards and acknowledge the fact that they are impoundments. We separate riverine impoundments from lakes raised by a dam so we at least have the ability to think about separate WQ Standards for those two kinds of impoundments that acknowledge that is not the way that nature made things.

Keith Robinson – The bigger impact on drawdowns may not be on the lake but on the receiving water downstream. I have seen draw downs where they hold back the water in the flow knowing that they were going to restore the water levels. I have seen really low levels in the areas down stream. What is the impact on the receiving water downstream versus the impoundment?

Paul Currier – I have an anecdotal story that follows on that which is four or five years old. The Dam Bureau put the stop logs in Northwood Lake and within hours after Fish & Game had the stocking truck on the downstream reach and we had a lot of flopping fish.

Dave Cedarholm – It seems that the de minimis threshold is a little arbitrarily over simplified and there should be some consideration of the duration and frequency of the drawdown. The town has been looking for a permit to increase the 6" de minimis drawdown to 18". However, in the five years that I have been there we have never even come close to drawing down even half-an-inch so the approval to do something that might only occur once every ten years and may only last three or four weeks at a time, seems quite de minimis. A one foot drawdown in the summer seems arbitrary and it is only because that is what Maine has in their laws.

Phil Trowbridge – At least it has some precedent. It doesn't make it completely arbitrary. Certainly frequency could be added. What I am trying to do with this is to add different level of complexity at different stages so not everyone has to go through a detailed analysis. The number that most people know when they call is how far they want to drawdown. That is where the first screening should be done.

Mike Metcalf – Do people call now or do they just take it down?

Phil Trowbridge – They will apply to us for a WQ Certification. You get into one of these chicken and egg dances and they say they want to drawdown 2' ask what we think of that. It depends on what they are going to do. They don't want to propose anything until they know what we are going to say about it and we don't want to say anything about it until we know what they are proposing. It ends up in this loop for months. We want to give them some guidance.

Bill Schroeder – We usually stop at 3:30. If you have further questions on this topic, please e-mail or write Phil Trowbridge.

Phil Trowbridge – By all means, more input is better. Given that we are moving to do the legislation, we will continue to revisit this topic for the next few meetings for a portion of the meeting with the goal of trying to have something in place by June. It may not be perfect but in the absence of anything, it is better than that.

3:05 – 3:43 Other Business and Confirm Next Meeting Date (3/24/10)

William Schroeder

The next meeting date is March 24th at DES in Rooms 110,111 and 112 from 1:30 to 3:30.

➤ **Peter Rice** motioned to adjourn and **Michelle Daley** seconded.

Adjourned at 3:45